

## Position Statement

Zoox is a young start-up company with the vision of creating a safe, ride sharing platform for the upcoming generations. With their autonomous driving software and advanced AI algorithms, Zoox has developed some vehicles which have been tested and proven to perform very well. Covid-19 had caused Zoox financial issues and shifted Zoox's future expectations in terms of funding and technological advancements. This lowered the company's value and as a result, Amazon acquired the company for \$1.2 billion.

In this evaluation case we are presented with the Amazon acquisition of Zoox Inc. In this paper we will evaluate (1) what value Amazon saw in Zoox? (2) To what extent is the fee of \$1.2 billion that Amazon paid to acquire Zoox justifiable? (3) What use will Amazon give to Zoox, and in what way can assume reap the maximum gains from Zoox? (4) How will Zoox's and Amazon's competitors react to Amazon's purchase of Zoox? (5) How much funding should Amazon allocate in Zoox so that the company enhances and accelerates their research and development?

## Criteria Selection

The criteria we decided to focus on to formulate our evaluation is dependent on the evaluation questions presented in the position statement. To thoroughly analyze these questions, we decided to focus on SWOT analysis, Porter's five forces, growth analysis, predicting competitors' reaction, acknowledge Amazon's business strategy, examine the current economic climate and do a quantitative analysis that , in conjunction, offer an accurate and objective lense to analyze the questions presented in the case.

## Evaluation

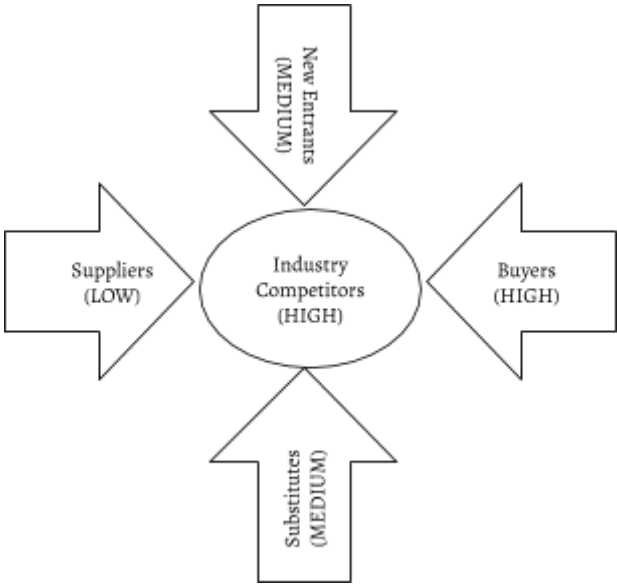
### SWOT

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|--|--|
| <b>Strengths</b> <ul style="list-style-type: none"><li>● Committed to R&amp;D</li><li>● Test vehicles had showed great performance)</li><li>● Use of ODD (operational design domain) which not a lot of other competitors use (the ODD verifies the vehicle follows traffic rules and regulations, speed ranges and maneuvers weather conditions)</li><li>● With more than 44% of the world's population owning a smartphone, virtually all potential customers can access Zoox's ridesharing platform</li><li>● Zoox's algorithms that enable autonomous driving are able to adapt to the most hostile environments</li><li>● Zoox's cars always retain a 360-degree view of the surroundings through a multi-sensor suite, which enables better self-driving performance</li></ul> | <b>Weaknesses</b> <ul style="list-style-type: none"><li>● Reliance on third-party staffing agencies for certain employee roles (cleaners and safety drivers) this could affect in long run since supply power can rise</li><li>● Turnover of Zoox employees</li><li>● As the company generates little to no income, it relies on outsider investments to fund their expensive R&amp;D</li><li>● For some maneuvers and situations, Zoox's software is dependent on internet connectivity to get instructions from the operator</li><li>● As of today, test drives are still in third-party cars and in limited locations</li><li>● Zoox's test cars seemed to stop abruptly compared to when a human driver would stop</li></ul> |
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|--|--|
| <p>Opportunities</p> <ul style="list-style-type: none"> <li>● Consumers becoming aware of the safety of and being interested in autonomous cars</li> <li>● Rising environmental awareness</li> <li>● Increase in subsidizing policies for EV and emergence of AV initiatives.</li> <li>● Growth in ride hailing due to the lack of reliable transportations</li> <li>● Fall in the price of commodities needed to build EV prices</li> <li>● The cost of EV continuously decreases and is predicted to decrease even more in the future</li> <li>● Technological advancements in the engineering of EV batteries have consistently improved average energy density of the battery and reduced its charging time</li> </ul> | <p>Threats</p> <ul style="list-style-type: none"> <li>● Highly competitive and innovative market</li> <li>● Increased interest from potential investors in autonomous project pursuit by bigger names such as General Motors and Wayno, in addition to new market trends that made investments into autonomous driving less appealing to investors</li> <li>● Competitors have had better funding and as a result better innovations in AV and EV</li> </ul> |
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Porter’s Five Forces

Porter’s five forces draw from industrial organization economics to yield five forces that determine the level of competitive intensity (e.g., industry competitors) and, thereupon, the level of attractiveness of an industry in terms of profitability. Using this framework we can better understand, qualitatively, what value Amazon saw in Zoox that made them acquire the company. In this specific framework, we will only focus on the autonomous vehicle (AV) and electric vehicle (EV) markets in conjunction, given that most AV are EV. Hence, we will not analyze the level of attractiveness of the ride sharing industry in this specific scenario.



### 1. Threat of New Entrants (MEDIUM)

Profitable industries will attract new entrants, which is undesirable for already established means as it means more competition and potentially fewer profits. The Threat of New Entrants in this market segment is medium due to the fact that even though the industry requires highly advanced technology the AV and EV markets have huge growth prospects which attract many firms such as Amazon. That being said, any new entrant would need massive investments and years of testing to compete with the current competition.

### 2. Threat of Substitutes (MEDIUM)

A substitute is any product that solves the same need or wants your product solves while using a different type of 'technology' to that of your product. The Threat of Substitutes in this industry is medium, as a result of there being at the moment many direct substitutes to our product (e.g., combustion engine cars, e-hailing, etc.), however, we must acknowledge that the majority of these substitutes don't yield the same benefit, and when cost for AV and EV reaches price-parity with that of combustion engine cars non-autonomous cars, the threat of substitutes will diminish.

### 3. Bargain Power of Buyers (HIGH)

The Bargain Power of Buyers is often described as the ability of customers to put the firm under pressure. Given that various companies are developing their own EV and AV technology and as of today more than 500 EV exist in the world and this number is expected to rise, the amount of product offerings is huge. As a result, consumers have a big say in what they purchase or not, and more if we take into account that this product is a high involvement product. As a result, bargain power of buyers is high.

### 4. Bargain Power of Suppliers (LOW)

The Bargain Power of Suppliers is broadly defined as the ability of suppliers to put a firm under pressure. This power is low given that we companies are mostly building the inputs they need to produce their output in addition to suppliers being in a competitive market, which means that their prices are competitive, and also the cost of the inputs of suppliers is low due to the fall in commodity prices, predominantly lithium.

### 5. Industry Competitors (HIGH)

There's a high level of competitiveness in the market with as many as 40 different car manufacturers and huge technological conglomerates expending billions in research and development in AV and EV. Moreover, acknowledging that there is a race to see what company releases first a fully AV, we can state that Zoox will definitely need more funds to survive in the market.

Without putting our findings into context one could argue that this Amazon's investment wasn't great. However, we must contemplate the whole picture to fully comprehend the Porter's five forces. Even if at first glance this analysis in this specific case yields an unfavorable answer with regards to the attractiveness of 2 of Zoox's 3 industries, if we take into account the predicted growth rate of these

industries into account we are able to understand Amazon's investment. These markets are predicted to more than ten-fold in the next 30 years, entering a market like this now could potentially yield huge benefits in the long-term just for a little short-term pain.

### **Competitor Reaction**

I will divide this analysis in two different parts, one will include the automobile market (AV and EV) and the other the ride sharing market.

1. Assuming competitors will act rationally and will take actions that will be the most beneficial to them, in the automobile market (AV and EV) the news that Amazon acquired Zoox won't be taken lightly. Consequently, big players (Tesla, Waymo, Argo AI, GM) are expected to react either by accelerating their R&D of AV mainly and/or increasing the funding for their R&D efforts for AV mainly. They would do this as they would want to maintain the R&D advantage they have over Zoox, and because they predict that Amazon will increase the funding for R&D efforts of Zoox so that the company can become a leader in the market.
2. Assuming competitors will act rationally and will take actions that will be the most beneficial to them, in the ride sharing market the news that Amazon acquired Zoox, won't cause much change. This is because Zoox is still in the R&D stage of their product (they haven't yet release their product) and big players in the e-hailing and car sharing market segments of the ride sharing market such as Uber and Lyft in most, a huge comparative advantage in most if not all aspects of the ride sharing market when compared to Zoox. Moreover, these two companies have more important matters to worry about such as the fact that they have never generated profits. Furthermore, these two companies have already set in march huge promotional strategies to increase their revenue streams, and stopping all of that or decreasing the funds allocated to those promotional strategies just to react to the actions of a potential future competitor wouldn't be rational.

### **Growth Analysis**

Zoox has been able to make a name for itself with its innovation and their overpromises to investors. However, just seeing these two aspects of the company won't tell us what made Amazon spent over \$1 billion dollars in acquiring Zoox, we must understand what makes Zoox stand out to potential customers, or in other words, what's there growth strategy into the future that could propulse Zoox to be the dominant player in all of its markets. These are some of the actions the company will take to foster their growth:

1. Emphasis in R&D

Zoox has invested more than \$1 billion dollars into developing its product. Moreover, the company as of today has more than 100 patents. Even though the company hasn't yet reached the level of development that some of its direct competitors possess, they are still in the race to be the first company to develop a Level 5 AV. Furthermore, their emphasis in R&D has made them develop product attributes such as ODD that none of its competitors have.

2. Differentiation

Zoox sells itself to investors and to the public not only as a company of zero-emission AV, which virtually every competitor in the market is, but they sell themselves

as a company that has built their own innovative grown-up vehicle, in addition to being zero-emissions (EV) and autonomous. Hence, they offer you two products in one, which adds more value to the customers. This becomes more apparent when adding the fact that they want to integrate this product into the ride sharing market, specifically into the e-hailing market segment and potentially the ride sharing market segment too. This will make them the only company that sells ride-hailing services via a unique internet platform with custom built zero-emissions AV.

### 3. Accessibility

As mentioned above, Zoxx's intention is to be the only company that sells ride-hailing services via a unique internet platform with custom built zero-emissions AV. By doing this, they attempt to decrease the ride-hailing services costs, as autonomous vehicles don't receive a salary as drivers do, making them more accessible to all consumers. Another way the company attempts to make its services and product more accessible is by using a platform on the internet to book their services. This means that anybody that has access to the internet may use their services, if available in the requested geographical location, making accessible to virtually everyone that could pay for the service.

## Quantitative Analysis

### Ride Sharing Market:

In these calculations we assume the market size of the market segment e-hailing stays constant at 29% even when the market increases as a whole, and that Zoxx is only on that market segment. We use the equation given below to calculate the market size of the ride sharing market.

$Y = B \times (r)^t$ , where B is the market size in billions of the ride share market in 2018, r is the rate at which the market is predicted to grow from 2018-2025 and t is the years (2018 is year 0). Using this equation I get:  $Y = 61.3(1+0.1987)^t$

| 2021                              | 2022                              | 2023                              | 2024                              | 2025                              |
|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| When t = 3 years, Y = 105.58B     | When t = 4 years, Y = 126.56B     | When t = 5 years, Y = 151.71B     | When t = 6 years, Y = 181.85B     | When t = 7 years, Y = 217.98B     |
| Assuming 10% share of the market: | Assuming 10% share of the market: | Assuming 10% share of the market: | Assuming 10% share of the market: | Assuming 10% share of the market: |
| Revenue = 105.58B * 0.29 * 0.1    | Revenue = 126.56B * 0.29 * 0.1    | Revenue = 151.71B * 0.29 * 0.1    | Revenue = 181.85B * 0.29 * 0.1    | Revenue = 217.98B * 0.29 * 0.1    |
| Revenue = \$3.06 B                | Revenue = \$3.67B                 | Revenue = \$4.40 B                | Revenue = \$5.27 B                | Revenue = \$6.32 B                |
| Assuming 20% share of the market: | Assuming 20% share of the market: | Assuming 20% share of the market: | Assuming 20% share of the market: | Assuming 20% share of the market: |
| Revenue = 105.58B * 0.29          | Revenue = 126.56B * 0.29 * 0.1    | Revenue = 151.71B * 0.29 * 0.1    | Revenue = 181.85B * 0.29          | Revenue = 217.98B *               |

|                                   |                                   |                                   |                                   |                                   |
|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| *0.1                              |                                   |                                   | *0.1                              | 0.29 *0.1                         |
| Revenue = \$6.12 B                | Revenue = \$7.34 B                |                                   | Revenue = \$10.55 B               | Revenue = \$12.64 B               |
| Assuming 50% share of the market: | Assuming 50% share of the market: | Assuming 50% share of the market: | Assuming 50% share of the market: | Assuming 50% share of the market: |
| Revenue = 105.58B * 0.29 *0.5     | Revenue = 126.56B * 0.29 *0.5     | Revenue = 151.71B * 0.29 *0.5     | Revenue = 181.85B * 0.29 *0.5     | Revenue = 217.98B * 0.29 *0.5     |
| Revenue = \$15.31 B               | Revenue = \$18.35 B               | Revenue = \$22.00 B               | Revenue = \$26.37 B               | Revenue = \$31.61B                |

Given that Zoox has spent almost a billion dollars in R&D for its products, even in 2021 that would be the year with the lowest revenue potential, Zoox is able to triplicate its investments by just capturing a 5% stake of the e-hailing market share. Hence, it would be a commendable option for Zoox to continue with its current strategy and join this market segment as soon as possible.

#### AV Market:

In this analysis we assume that the only good Zoox sales is their software that enables vehicles to be autonomous. We calculate potential revenue for prices of \$10,000 dollars and \$20,000 dollars for Zoox's software. It is important to remark that these calculations only apply for North America, and we use the figures of Exhibit 7.

For these calculations we use the following equation:

$Y = B \times (r)^t$ , where B is the demand in thousands for AV in 2021, r is the rate at which the market is predicted to grow from 2021-2030 and t is the year (2021 is year 0). Using this equation I get:  $Y = 23.5(1+0.631)^t$

| 2021                                | 2023                                | 2025                                 |
|-------------------------------------|-------------------------------------|--------------------------------------|
| When t = 0 years, Y = 23.50k        | When t = 2 years, Y = 62.51k        | When t = 4 years, Y = 166.28k        |
| Assuming 20% share of the market:   | Assuming 20% share of the market:   | Assuming 20% share of the market:    |
| Revenue 1 = $23.50k * 0.2 * 10,000$ | Revenue 1 = $62.51k * 0.2 * 10,000$ | Revenue 1 = $166.28k * 0.2 * 10,000$ |
| Revenue 1 = \$47M                   | Revenue 1 = \$125M                  | Revenue 1 = \$333M                   |
| Revenue 2 = $23.50k * 0.2 * 20,000$ | Revenue 2 = $62.51k * 0.2 * 20,000$ | Revenue 2 = $166.28k * 0.2 * 20,000$ |
| Revenue 2 = \$94M                   | Revenue 2 = \$250M                  | Revenue 2 = \$667M                   |
| Assuming 50% share of the market:   | Assuming 50% share of the market:   | Assuming 50% share of the market:    |
| Revenue 1 = $23.50k * 0.5 * 10,000$ | Revenue 1 = $62.51k * 0.5 * 10,000$ | Revenue 1 = $166.28k * 0.5 * 10,000$ |
| Revenue 1 = \$118M                  | Revenue 1 = \$312M                  | Revenue 1 = \$831M                   |
| Revenue 2 = $23.50k * 0.5 * 20,000$ | Revenue 2 = $23.50k * 0.5 * 20,000$ | Revenue 2 = $166.28k * 0.5 * 20,000$ |
| Revenue 2 = \$235M                  | Revenue 2 = \$625M                  | Revenue 2 = \$1662M                  |

In this scenario, assuming the company only invests one billion dollars, the company would need 3 years either with a 20% or 50% market share of the North American AV market to break even.

### Amazon's Strategy

Amazon is not a book company, website, delivery network or really a retailer. They are a scale company. Jeff Bezos, must have realized the idea that by taking something and multiplying it by a hundred, thousand or a million times, Amazon could achieve things that small businesses never could. Amazon is unique compared to others since its specialty is its scale, not products. When considering a new product the flowchart is simple for them as they consider if the product will be quicker, bigger and easier. If yes to all questions, Amazon will either sell it or soon will. From there, Amazon does not stop with enjoying its profits. Instead, they think of what more they can do. They get as many users as possible and give brand deals such as a tablet, amazon echo and free shipping to any willing company. More users will bring more data. As a result this helps Amazon improve the product and a better product would definitely attract more consumers. With this technique, Amazon does not only make it easy to live off Amazon, but they make it hard not to. Recognizing this, Amazon has so much power from operating at this scale.

Amazon purchases other companies such as Whole Foods because it is not what they are good at:

books never expire, but groceries do. This will get consumers going back to Amazon and adding it to their routine. Also, spending a few billion dollars fulfilling millions of packages, they are able to achieve something UPS or FedEx cannot. When looking at profit, Amazon uses funds from one of their services to fund another. For example, using funds from AWS (Amazon Web Services) to fund Kindle and Echo. Furthermore, operating at a lower revenue does not seem to hurt them as supermarkets operate at low profit margins. But Amazon can buy Whole Foods and even lower prices. This acquisition also allows them to experiment. Therefore, Amazon is able to make billions with concentrating on scale and customers.

Using this knowledge it can be the same to assume that a similar strategy could be implemented with Zoox. If Amazon uses its power to scale up Zoox capabilities, Zoox instead of a car company may become a software company, in other words, Zoox could be the company that sells to other car manufacturers the self-driving technology and as they become an economy of scale, the cost for this product could become lower of that if the automobile company prefers to develop the self-driving technology by itself.

#### Current Economic Climate

At the start of the year, no one will have predicted that a global pandemic will hit the world and its effects in the world's economy (in addition to all other sorts of damage). Companies that were thriving seven months ago are, today, in a tricky position. One of those companies is Zoox. The COVID-19 pandemic hit the company really hard and in a matter of months, due to the fact that the company generates virtually no revenue and because of that is highly dependent on investor's money, the company found itself out of funding. This made the company list itself for sale at a price less than half of its valuation. Nevertheless, this doesn't mean the company is not valued anymore at \$3.2 billion, which was the value given to the company by investors, it just means that Amazon found a great buy in a chaotic market. Hence, taking this into account we may then state that Amazon found an excellent offer in the market as they acquire a company for less than half of its real value.

#### Recommended Actions

After concluding our evaluation we will now present our recommended actions based in the previous part of this paper. We will segment our recommended action into: short-term and long-term.

##### Short-Term

1. Amazon should invest heavily on Zoox to reduce the technological advantage that competitors such as Google or Tesla have on the AV technology
  - a. Pros
    - i. This will enable the company to acquire the best labor, and buy the products of the best quality to continue conducting their R&D. It could also accelerate the development of Zoox's self-driving technology, and even make Zoox the first company to reach a level 5 autonomous driving level.
  - b. Cons



- i. This is obviously going to be very costly to Amazon. Moreover, there is a trade-off for Amazon, the money that would be invested here could be invested elsewhere by Amazon.
2. Stop the development of the Zoox's custom built car.
  - a. Pros
    - i. This will allow the company to focus solely on one objective: acquiring the technology to make any car autonomous. Moreover, it reduces the cost of R&D and it wouldn't be a big loss as the company hasn't yet developed the car they promised to investors.
  - b. Cons
    - i. The company would have made a promise to investors that it wouldn't do. It can also demoralize some of the workers that had been working in developing the Zoox's car.
3. The company should change its goal. They are not going to be a 'robo-taxi' company anymore.
  - a. Pros
    - i. This would enable workers to focus solely in developing self-driving technology as they would stop developing the platform that was supposed to enable customers to get a Zoox's car for a ride.
  - b. Cons
    - i. The company would have made a promise to investors that it wouldn't do (they sold themselves as an Uber, but with autonomous custom built cars). It can also demoralize some of the workers that had been working in developing Zoox's platform. Furthermore, as seen in the quantitative analysis, the company could let go a huge margin of profits that could be attainable if the company continues targeting the e-hailing market.

## Long Term

1. Amazon should use a push strategy to move Zoox's self-driving technology when developing to their customers (car manufacturers).
  - a. Pros
    - i. Amazon is already well established and has a lot of push power.
  - b. Cons
    - i. Some of Amazon's distributors can potentially be unhappy with this strategy.
2. Amazon should use a competitive pricing (price below market price) for its software and hardware technology that enables AV.
  - a. Pros
    - i. The cost for the self-driving technology if bought from Zoox would be lower than that if an automobile company prefers to develop the self-driving technology by itself. Hence, there will be a lot of demand for Zoox's product.
  - b. Cons
    - i. Profits may potentially not be achieved due to the low pricing of Zoox's products.
3. Zoox should focus on becoming an economy of scale with the help of Amazon.
  - a. Pros.

- i. The price per unit of output will decrease drastically. This will enable Zoxx to outprice and eliminate its competition as they can offer the same product at a lower price.
  - b. Cons
    - i. This could take a long time and profits won't be achieved until they are able to become an economy of scale.
- 4. After realising its self-driving technology product, Zoxx should still spend heavily in R&D to add more value to and continuously improve its product.
  - a. Pros
    - i. This will enable Zoxx's product to have a longer life, hence more profits could be achieved. Moreover, Zoxx's product could be of better quality than that of its competitors.
  - b. Cons
    - i. High costs will potentially cause Zoxx to financially lose money. But they are able to regain their spending with cost plus pricing.